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मानक

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IS 7238 (1997): Tragacanth Gum, Food Grade [FAD 8: Food Additives]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
ट्रेगाकेन्थ गम, खाद्य ग्रेड — विशिष्टि
(पहला पुनरीक्षण)
Indian Standard
TRAGACANTH GUM, FOOD GRADE —
SPECIFICATION
(*First Revision*)

ICS 67.220.20

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BUREAU OF INDIAN STANDARDS
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AMENDMENT NO. 1 FEBRUARY 2006
TO
IS 7238 : 1997 TRAGACANTH GUM, FOOD GRADE —
SPECIFICATION

(First Revision)

(*Page 1, clause 2*) — Insert reference of the following Indian Standards at the appropriate place:

<i>'IS No.</i>	<i>Title</i>
5887 (Part 1) : 1976	Methods for detection of bacteria responsible for food poisoning : Part 1 Isolation, identification and enumeration of <i>Escherichia coli</i> (<i>first revision</i>)
5887 (Part 3) : 1999	Methods for detection of bacteria responsible for food poisoning : Part 3 General guidance on methods for detection of <i>Salmonella</i> (<i>second revision</i>)'

(*Page 1, clause 4.2*) — Insert the following new clause after 4.2:

'4.3 Microbiological Specifications

4.3.1 *Escherichia coli*

Escherichia coli per gram of the product shall be negative when determined according to the method prescribed in IS 5887 (Part 1).

4.3.2 *Salmonella*

Salmonella per gram of the product shall be negative when determined according to the method prescribed in IS 5887 (Part 3).'

(FAD 8)

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Additives Sectional Committee had been approved by the Food and Agriculture Division Council.

With the increased production of processed foods, manufacturers have started adding a large number of substances, generally in small quantities, to improve the appearance, flavour, texture or storage properties, etc, of the processed foods. As certain impurities in these substances have been found to be harmful, it is necessary to have a strict quality control of these food additives. A series of standards was, therefore, prepared to cover purity and identification of these substances. These standards would help in checking purity, which requires to be checked at the stage of manufacture, for it is extremely difficult to detect the impurity once these substances have been added to the processed foods. Besides, these standards are intended to guide the indigenous manufacturers in making their product conform to specifications that are accepted by scientists, health authorities and international bodies.

Use of gum as thickening agent and stabilizer has been permitted in the *Prevention of Food Adulteration Rules, 1955* for certain foods.

The standard was first published in 1974 and is being revised to make the following additions/changes:

- a) To provide the description clause covering solubility separately from requirements to keep it in line with the food chemical codex.
- b) To provide requirements for heavy metals, viscosity and their test methods.
- c) To provide for 'directions for storage' and 'expiry/best before date' under marking clause.

Considerable amount of assistance has been derived from the following publications:

Specifications for the identity and purity of some food colours, emulsifiers, stabilizers, anti-caking agents and certain other substances, FAO Nutrition Meetings Report Series No. 46B, WHO (Food Add/ 70.37, FAO), Rome.

Food Chemical Codex. Third Edition. National Academy of Sciences, National Research Council, Washington D.C., USA.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TRAGACANTH GUM, FOOD GRADE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of test for tragacanth gum, food grade.

2 REFERENCES

The following Standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
1070 : 1992	Reagent grade water (<i>third revision</i>)
1699 : 1995	Methods of sampling and test for synthetic food colours (<i>second revision</i>)
6795 : 1972	Acacia (Arabic) gum, food grade

3 DESCRIPTION

3.1 General

Tragacanth gum is dried gummy exudation obtained from *Astragalus strobiliferus* or other species of *Astragalus* (Fam. *Leguminosae*).

3.2 Description

Tragacanth gum is a white to yellowish-white, nearly odourless powder.

3.2.1 Unground Tragacanth

Occurs as flattened, lamellated, frequently curved fragments or straight or spirally tested linear pieces from 0.5 to 2.5 mm in thickness. It is white to pale yellow in colour, translucent, horny in texture and having a short fracture. It is odourless and has an insipid mucilaginous taste. It is rendered more easily pulverizable if heated to a temperature of 50°C.

3.2.2 Powdered Tragacanth

It is white to yellowish-white in colour.

3.3 Solubility

3.3.1 One gram of powder of tragacanth in 50 ml of water swells to form a smooth, suff, opalescent mucilage free from cellular fragments.

3.3.2 Insoluble in ethanol.

NOTE — The solubility is intended only as information regarding approximate solubility and is not to be considered as a quality requirement and is of minor significance as a means of identification or determination of purity, and dependence must be placed on other specifications.

4 REQUIREMENTS

4.1 Identification Tests

4.1.1 When examined microscopically in water mounts, it shows numerous angular fragments with circular or irregular lamellae and starch grains up to 25 μ m in diameter. It should show very few or no fragments of lignified vegetable tissues.

4.1.2 Identify arabinose, xylose, fructose, galactose and galacturonic acid in the product on a chromatogram by the method given in Annex A.

4.2 The material shall also conform to the requirements given in Table 1.

Table 1 Requirements for Tragacanth Gum

Sl No.	Requirement	Characteristic	Method of Test, Ref to		
			Annex of This Standard	IS 6795	IS 1699
(1)	(2)	(3)	(4)	(5)	(6)
i)	Loss on drying, percent by mass, <i>Max</i>	10	—	A-1	—
ii)	Total ash, percent by mass, <i>Max</i>	4	—	A-2	—
iii)	Acid insoluble ash, percent by mass, <i>Max</i>	0.5	—	A-3	—
iv)	Starch and dextrins	To pass the test	—	A-5	—
v)	Tannin-bearing gum	To pass the test	—	A-6	—
vi)	Arsenic (as As), mg/kg, <i>Max</i>	3	—	—	15
vii)	Lead (as Pb), mg/kg, <i>Max</i>	10	—	—	15
viii)	Heavy metals (as Pb) mg/kg, <i>Max</i>	40	B	—	—
ix)	Viscosity of a 1 percent solution, <i>Min</i>	250	C	—	—
x)	Karaya gum test, percent by mass, <i>Min</i>	To pass the test	D	—	—

5 PACKING, STORAGE AND MARKING**5.1 Packing**

The material shall be securely packed in well-filled containers with minimum access to light and moisture. The containers shall be such as to preclude contamination of the contents with metals or other impurities.

5.2 Storage

The material shall be stored in a cool and dry place so as to avoid exposure to heat.

5.3 Marking

Each container shall be legibly and indelibly marked with the following information:

- a) Name of the material including the words 'Food Grade';
- b) Name and address of the manufacturer;
- c) Net content when packed;
- d) Batch or code number;
- e) Instructions for storage of the material;
- f) Expiry/Best before date; and
- g) Any other requirements as specified under the *Standards of Weights and Measures (Packaged*

Commodities) Rules, 1977 and Prevention of Food Adulteration Rules, 1955.

5.3.1 BIS Certification Marking

The containers may also be marked with the Standard Mark.

5.3.1.1 The use of the Standard mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

The representative samples of the material shall be drawn according to the method prescribed in 4 of IS 1699.

7 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause 4.1.2*)

CHROMATOGRAPHIC IDENTIFICATION OF SUGARS IN THE HYDROLYSATE FROM GUMS**A-1 PROCEDURE**

A-1.1 Boil a mixture of 100 mg of the sample and 20 ml of 10 percent sulphuric acid for 3 h. Allow to cool and add excess barium carbonate (about 10 mg). Mix with a magnetic stirrer until the solution is of pH 7, and filter. Evaporate the filtrate in a rotary evaporator at 30-50°C in vacuum until a crystalline (or syrupy) or residue is obtained. Dissolve it in 10 ml of 40 percent methanol. This is the hydrolysate used below.

A-1.2 Prepare thin layer chromatoplates with a mixture of 15 g cellulose powder (for example, Camag Cellulose D) and 90 ml water and dry them for 10 minutes at 100°C.

A-1.3 Place 1 to 10 microlitre spots of hydrolysate on the starting line of two chromatoplates and spots containing 1 to 10 micrograms of the sugars which could be present in the hydrolysate. Use two solvents, namely, (a) a mixture of formic acid, methyl ethyl ketone, tertiary butanol and water (15:30:40:15 by volume); and (b) a mixture of isopropanol, pyridine, acetic acid and water (40:40:5:20 by volume) to develop the plates.

A-1.4 After development, spray with a solution of 1.25 g anisidine and 1.65 g phthalic acid in 100 ml ethanol and heat the plates at 100°C for 10 minutes. A greenish-yellow colour is produced with hexoses, a red colour with pentoses and a brown colour with uronic acids.

ANNEX B

[*Table 1, Sl No. (viii)*]

TEST FOR HEAVY METALS

B-1 Prepare and test a 500 mg sample as per the

method given at 16 of IS 1699 using 20 µg of lead ion in solution A.

ANNEX C*[Table 1, Sl No. (ix)]***TEST FOR VISCOSITY**

C-1 Transfer a 4.0 g sample, finely powdered, into the container of a stirring apparatus equipped with blades capable of revolving at 1 000 rpm. Add 10 ml of alcohol to the sample, soas to wet the gum uniformly, and then add 390 ml of water, avoiding the promotion of lumps. Immediately stir the mixture for 7 minutes, pour the resulting dispersion into a 500 ml bottle, insert a stopper, and allow to stand for about 24 h in a waterbath at 25°C. Determine the apparent viscosity at a temperature with a brookefield or equivalent type viscometer using spindle No. 2 at 30 rpm and a factor 10.

ANNEX D*[Table 1, Sl No.(x)]***TEST FOR KARAYA GUM**

D-1 Boil 1 g of the material with 20 ml of water until a mucilage is formed, add 5 ml of hydrochloric acid and again boil the mixture for 5 minutes. No permanent pink or red colour shall develop.

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